

Birds of Ndere Island National Park, Lake Victoria Kenya: A preliminary survey

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Ndere is a remote island off Lake Victoria, Kenya. It was gazetted as a National Park, under the Kenya Wildlife Service (KWS) in 1986. Ndere Island National Park (NINP) is one of the seven national parks and reserves that constitute the western Kenya tourism circuit. The island's flora and fauna had never been explored in detail prior to this study, a factor that could limit targeted conservation planning and tourism.

We surveyed NINP in October-November 2004 to provide baseline scientific information on the flora and fauna of the island. In this paper we specifically provide results on the ornithological aspects of the expedition. In particular, baseline data on bird species occurrence, richness and relative abundance within the island were collected.

Study Area

Ndere Island National Park (NINP) is a small island covering about 4.2 km², off the northern shore of the Winam Gulf of Lake Victoria. It is about 2 km off Kamuga-Asembo shores and about 40 km west of Kisumu City. Overall, NINP is undeveloped except for two campsites and a network of (walking) trails.

Originally, Ndere Island was owned by the local Luo community living on the nearby mainland. It was popular for farming and as a source of firewood, thatching grass and other building materials for the community. Utilization of the resources was always restricted in respect of the Luo's cultural values of the island. Since its designation as a National Park, the policy has been to safeguard the island from use, destruction and degradation. Consequently, the park has naturally regenerated to a beautiful island with wooded shoreline and an open summit covered by tall grasses.

The island has four major habitat types for birds: (1) grasslands (tall, short, burnt), (2) woodland (with some bush), (3) woodland-grassland (woodland interspersed with some grassland patches), and (4) lake shoreline (island edge).

Methods

Different methods were used to assess the birds in the four main habitat types in the park. In the woodland, grassland and wooded grassland habitats, birds were surveyed using Timed Species Counts (TSCs) (Bibby *et al.* 1998). Each

TSC lasted for 40 minutes in which species were observed in four blocks of ten minutes each. Only new species, not seen during the preceding time intervals were recorded. It was assumed that common species were likely to be encountered faster (hence report more sightings in the first or second 10-minutes time intervals) than rarer ones (that were more likely to be reported infrequently, and more so in the third or fourth time intervals). This approach allowed the ranking of species where species seen in the first 10 minutes were given a rank of 4, and those in seen in the last ten minutes, a rank of 1. This provided a reliable measure of species relative abundance. Observers walked randomly around the habitat types, listing all species seen or heard within that habitat regardless of how far away they were. Species flying over were included only if they were deemed to "use" that habitat; for instance, swallows feeding, kites looking for food or raptors displaying within the habitat under survey. Fourteen, eight and 12 TSCs were undertaken in the woodland, grassland and wooded grassland habitats respectively. The relative abundance rank for each species was calculated as the total rank scores for that species divided by the number of TSCs ran in that habitat. All TSCs were done between 06:30 and 11:00 when birds were expected to be most active.

For the water birds one total count was done along the shoreline and water edge of the island. Observers on a motorboat moved at a slow speed around the entire island and counted the number of individuals of each water bird species encountered along the shore.

In addition to species information obtained from the above methods, observers spent time bird watching to come up with a comprehensive checklist of the bird species of NINP. These were done casually to cover all the different types of habitats. Additional techniques for recording difficult species were used, e.g. play backs, listening for nocturnal species, and *ad hoc* mist-netting. A comprehensive list of birds seen during the survey period was compiled.

Results and Discussion

Bird list and records

A total of 133 bird species were recorded from the island. Due to its diversity of habitats, NINP is home to a relatively large number of bird species despite its small size. Five species were new records or species for which only old records (before 1970) were known for the Quarter-square-degree (QSD) 60b (Lewis & Pomeroy 1989) in which the island falls (Appendix 1). An additional three species (Pennant-winged Nightjar *Macrodipteryx vexillarius*, Leivallant's Cuckoo *Oxylophus levaillantii* and Eurasian Cuckoo *Cuculus canorus*) of national interest (Ornithological Sub-committee 1996) were recorded.

Birds in the different habitat types

Different habitats showed distinct bird species compositions with the Grey-backed Camaroptera *Camaroptera brachyura* and Blue-spotted Wood Dove *Turtur afer*, White-throated Bee-eater *Merops albicollis*, Black-headed Gonolek *Laniarius erythrogaster* and Pied Kingfisher *Ceryle r. rudis* being the

most common species in the woodlands, grasslands, wooded-grassland and shoreline habitats, respectively (Appendix 1).

Nine Forest generalists (F – birds that may occur in undisturbed forest but are also regularly found in forest strips, edges and gaps) and 27 Forest visitors (f – birds often recorded in forest, but are not dependent upon it (Bennun *et al.* 1996) were recorded (Appendix 1). The presence of the forest generalists is an indication of the presence of a secondary forest, especially in the north-western part of the island where the woodlands tended to be thicker, taller and wetter within a small area (c. 4 ha). The grasslands held quite a number of grassland-dependent species including Rattling Cisticola *Cisticola chiniana*, Yellow-throated Longclaw *Macronyx croceus* and Flappet Lark *Mirafra rufocinnamomea*, all which were fairly common (Appendix 1). Family Alcedinidae were notably well represented in the island, with seven out of the 11 kingfisher species known in Kenya recorded.

Global conservation importance of NINP

We recorded several species of global conservation concern during our survey:

- Pallid Harrier *Circus macrourus*, a Globally Near-Threatened species (BirdLife International 2004)
- Three of the nine Lake Victoria Basin Biome species (Bennun & Njoroge 1999) were seen: Black-lored Babbler *Turdoides sharpei*, Red-chested Sunbird *Nectarinia erythrocerca* and Northern Brown-throated Weaver *Ploceus castanops*. Expectedly, other biomes were represented by a lower proportion of the species, with only three out of 92 Somali-Masai Biome species and one out of 67 Afrotropical Highlands Biome species seen
- In total, 22 Palearctic and 10 Afrotropical-Malagasy migrants were recorded inside the park. Migrants were especially common in the grasslands where the White-throated Bee-eater, Barn Swallow *Hirundo r. rustica* and Pallid Harrier *Circus macrourus* were abundant. Willow Warbler *Phylloscopus trochilus* was also fairly common throughout the island, while Yellow Wagtail *Motacilla flava* occurred in large groups wherever they were seen, especially in the short-burnt grasslands.

Importance for roosting

A large group (c. 500) of Barn Swallows was observed one morning flying around a tall grassland patch by the lake shore on the island. It is possible that the island is used by some Barn Swallows for roosting during their non-breeding visit to Kenya. No roosting sites for water birds were observed in the island, and water bird numbers of the shores were generally low compared to other wetlands in the country.

Threats to the island's avifauna

Being a protected area, there were no major human-induced threats to the island bird habitats. However, there were potential threats associated

with illegal cutting of wood and grass, and the general perception by the surrounding community that the park's management was denying them access to resources within the island. This was seen to represent a loss of opportunity for the community who gave up their land in the hope that they would later start benefiting from its protection. While not posing problems currently, these sentiments need to be nipped in the bud before they develop into real conservation issues.

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Appendix 1. Checklist of birds recorded in Ndere Island National Park and the habitats they were reported in. TSC results for grassland, woodland, wooded-grassland habitats and total count results for the shoreline are included. Species recorded outside TSCs and shoreline counts are marked 'x'.

Common name	Scientific name	Grassland TSC	Woodland TSC	Wooded Grassland TSC	Shoreline Total count	*Cat.	Migration status
Great Cormorant	<i>Phalacrocorax carbo</i>				x	nf	
Long-tailed Cormorant	<i>P. africanus</i>				25	nf	
Cattle Egret	<i>Bubulcus ibis</i>				x	nf	am
Little Egret	<i>Egretta garzetta</i>				5	nf	
Green-backed Heron	<i>Butorides striatus</i>		0.3		3	nf	
Hammerkop	<i>Scopus umbretta</i>		0.2	0.9	3	nf	
Black Stork [#]	<i>Ciconia nigra</i>	0.5		0.3		nf	pm
African Open-billed Stork	<i>Anastomus lamelligerus</i>			0.3		nf	
Yellow-billed Stork	<i>Mycteria ibis</i>		x			nf	
Hadada Ibis	<i>Bostrychia hagedash</i>	0.1		0.2		nf	
Egyptian Goose	<i>Alopochen aegyptius</i>		0.6			nf	
Osprey	<i>Pandion haliaetus</i>	0.3				nf	pm
Black Kite	<i>Milvus migrans</i>	1.3	0.6	1.2		nf	am,pm
Banded Snake Eagle	<i>Circaetus cinerascens</i>		0.1			F	
African Harrier Hawk	<i>Polyboroides typus</i>		0.1			f	
Pallid Harrier	<i>Circus macrourus</i>	1.5		0.6		nf	pm
Montagu's Harrier	<i>C. pygargus</i>	x				nf	pm
Eurasian Marsh Harrier	<i>C. aeruginosus</i>		0.1			nf	pm
Common (Steppe) Buzzard	<i>Buteo buteo</i>	x				nf	pm
African Fish Eagle	<i>Haliaeetus vocifer</i>	0.1	1.4	2.1	2	nf	
Verreaux's Eagle	<i>Aquila verreauxii</i>		x	x		nf	
Booted Eagle	<i>Hieraetus pennatus</i>		x			nf	
Long-crested Eagle	<i>Lophaeetus occipitalis</i>			0.3		nf	
Crested Francolin	<i>Francolinus sephaena</i>	0.4	0.5	0.8		nf	
Helmeted Guineafowl	<i>Numida meleagris</i>	x		x		nf	
Black Crane	<i>Amaurornis flavirostris</i>				x	nf	

Common name	Scientific name	Grassland TSC	Woodland TSC	Wooded Grassland TSC	Shoreline Total count	*Cat.	Migration status
African Jacana	<i>Actophilornis africanus</i>				x	nf	
Black-winged Stilt	<i>Himantopus himantopus</i>				x	nf	am
Common Sandpiper	<i>Actitis hypoleucos</i>				25	nf	pm
Whiskered Tern	<i>Chlidonias hybridus</i>				3	nf	pm
White-winged Tern	<i>C. leucopterus</i>				3	nf	PM
African Green Pigeon	<i>Treron calva</i>	0.5				F	
Tambourine Dove	<i>Turtur tympanistria</i>		0.1			F	
Blue-spotted Wood Dove	<i>Tafer</i>		3.0	2.3		F	
Namaqua Dove	<i>Oena capensis</i>		0.5			nf	
Red-eyed dove	<i>Streptopelia semitorquata</i>		0.1			f	
African Mourning Dove	<i>S. decipiens</i>		0.6	1.8		nf	
Laughing Dove	<i>S. senegalensis</i>		0.4	0.3		nf	
Eastern Grey Plantain-eater	<i>Crimifer zonurus</i>		1.2	0.6		nf	
Levaillant's Cuckoo	<i>Oxylophus levaillantii</i>		0.1			f	x
Eurasian Cuckoo	<i>Cuculus canorus</i>		0.3	0.3		nf	x,PM
African Emerald Cuckoo	<i>Chrysococcyx cupreus</i>		x			F	
Klaas's Cuckoo	<i>C. klaas</i>	0.4	0.8	0.6		f	
Diederik Cuckoo	<i>C. caprius</i>			0.4		nf	
White-browed Coucal	<i>Centropus superciliosus</i>	1.6	1.7	2.7		nf	
Pennant-winged Nightjar	<i>Macrodipteryx vexillarius</i>	0.1	0.2			nf	x,AM
African Palm Swift	<i>Cypsiurus parvus</i>	1.1		0.3		nf	
Eurasian Swift	<i>Apus apus</i>	x				nf	PM
Mottled Swift	<i>A. aequatorialis</i>	0.1				nf	
White-rumped Swift	<i>A. caffer</i>	0.6		0.6		nf	
Little Swift	<i>A. affinis</i>	0.1		0.3		nf	
Speckled Mousebird	<i>Colius striatus</i>	1.7	1.7	1.2	1	nf	
Blue-naped Mousebird	<i>Urocolius macrourus</i>		0.6	0.9		nf	
Grey-headed Kingfisher	<i>Halcyon leucocapala</i>	1.1		1.0		f	am

Common name	Scientific name	Grassland TSC	Woodland TSC	Wooded TSC	Shoreline Total count	*Cat.	Migration status
Woodland Kingfisher	<i>H.senegalensis</i>	0.1	0.5	0.8		nf	
Striped Kingfisher	<i>H. chelicuti</i>	0.3		0.3		nf	
Malachite Kingfisher	<i>Alcedo cristata</i>		0.2		19	nf	
African Pygmy Kingfisher	<i>Ispidina picta</i>			0.3		f	am
Giant Kingfisher	<i>Megaceryle maxima</i>		0.1			nf	
Pied Kingfisher	<i>Ceryle rudis</i>		0.4	0.5	114	nf	
Eurasian Bee-eater	<i>Merops apiaster</i>	0.4		1.3		f	PM
White-throated Bee-eater	<i>M.albicollis</i>	3.1	1.6	2.3	1	f	am
Eurasian Roller	<i>Coracias garrulus</i>	0.1		0.5		nf	PM
Broad-billed Roller	<i>Eurystomus glaucurus</i>		0.1			f	am,mm
African Grey Hornbill	<i>Tockus nasutus</i>		0.1	0.4		nf	
Red-fronted Tinkerbird	<i>Pogoniulus pusillus</i>	1.1	2.0	2.7		nf	
Yellow-fronted Tinkerbird	<i>P. chrysoconus</i>	0.1	1.4	2.2		nf	
Spot-flanked Barbet	<i>Tricholaema lacrymosa</i>	0.6	0.5	0.3		nf	
White-headed Barbet	<i>Lybius leucocephalus</i>			0.7		nf	
Cardinal Woodpecker	<i>Dendropicos fuscescens</i>		0.5	0.6		f	
Flappet Lark	<i>Mirafra rufocinnamomea</i>	0.9	0.3	0.8		nf	
Plain Martin	<i>Riparia paludicola</i>	1.3	0.9	1.3		nf	
Sand Martin	<i>R. riparia</i>	1.2		0.9	5	nf	PM
Barn Swallow	<i>Hirundo rustica</i>	2.4	1.6	2.5		nf	
Red-rumped Swallow	<i>H. daurica</i>	0.3				nf	
Lesser Striped Swallow	<i>H. abyssinica</i>	0.3				nf	
African Pied Wagtail	<i>Motacilla aguimp</i>				1	nf	
Yellow Wagtail	<i>M. flava</i>	0.6	0.3	0.3	1	nf	PM
Grassland Pipit	<i>Anthus cinnamomeus</i>	1.1				nf	
Plain-backed Pipit	<i>A. leucophrys</i>	0.1	0.1			nf	
Tree Pipit	<i>A. trivialis</i>	0.5				f	PM
Yellow-throated Longclaw	<i>Macronyx croceus</i>	1.8		0.4		nf	

Common name	Scientific name	Grassland TSC	Woodland TSC	Wooded Grassland TSC	Shoreline Total count	*Cat.	Migration status
Little Greenbul [#]	<i>Andropadus virens</i>		1.0	0.9		F	
Yellow-throated Leaflove	<i>Chloroichia flavicollis</i>		1.5	1.0		f	
Common Bulbul	<i>Pycnonotus barbatus</i>	1.8	1.6	1.9	1	f	
Black-lored Babbler	<i>Turdoides sharpei</i>	0.3		0.3		nf	
Red-capped Robin-Chat [#]	<i>Cossypha natalensis</i>			0.3		F	
White-browed Robin-Chat	<i>C. heuglini</i>		1.6	0.7		f	
White-browed Scrub Robin	<i>Cercotrichas leucophrys</i>	0.8	1.5	1.5		nf	
African Thrush	<i>Turdus pelios</i>	0.3	0.1	0.5		f	
Spotted Flycatcher	<i>Muscicapa striata</i>	x	x	x		nf	PM
Swamp Flycatcher	<i>M. aquatica</i>		0.4		13	nf	
Pale Flycatcher	<i>Bradornis pallidus</i>		0.4			nf	
Olivaceous Warbler	<i>Hippolais pallida</i>			0.3		nf	PM
Olive Tree Warbler	<i>H. olivetorum</i>			0.1		nf	
Willow Warbler	<i>Phylloscopus trochilus</i>	1.4	2.0	1.1		f	PM
Red-faced Cisticola	<i>Cisticola erythrops</i>		0.6			nf	
Winding Cisticola	<i>C. galactotes</i>			0.2		nf	
Rattling Cisticola	<i>C. chiniana</i>	2.6	0.3	2.1		nf	
Zitting Cisticola	<i>C. juncidis</i>	0.1				nf	
Grey-backed Camaroptera	<i>Camaroptera brachyura</i>	0.5	3.0	2.7		f	
Grey-capped Warbler	<i>Eminia lepida</i>	0.1		0.7		nf	
African Paradise Flycatcher	<i>Terpsiphone viridis</i>	1.6	1.2	0.7	2	f	am
Common Wattle-eye	<i>Platysteira cyanea</i>	0.1	1.0	1.4		f	
Red-tailed Shrike	<i>Lanius isabellinus</i>	0.5	0.6	0.7		nf	PM
Brubru	<i>Nilais afer</i>			x		nf	
Black-headed Gonolek	<i>Laniarius erythrogaster</i>	1.1	2.0	3.1	2	nf	
Northern Puffback	<i>Dryoscopus gambensis</i>		0.8	0.3		F	
Black Cuckoo Shrike	<i>Campephaga flava</i>	1.0	0.1	1.0		f	am
Common Drongo	<i>Dicrurus adsimilis</i>			x		nf	

Common name	Scientific name	Grassland TSC	Woodland TSC	Wooded TSC	Grassland Total count	*Cat.	Migration status
Eurasian Golden Oriole	<i>Oriolus oriolus</i>	0.1	0.5			f	PM
Green-headed Sunbird	<i>Nectarinia verticalis</i>		0.1			F	
Scarlet-chested Sunbird	<i>Nectarinia senegalensis</i>	1.3	2.4		0.8	nf	
Marico Sunbird	<i>Nectarinia mariquensis</i>				0.3	nf	
Purple-banded Sunbird	<i>Nectarinia bifasciata</i>		0.1			f	
Red-chested Sunbird	<i>Nectarinia erythrocerca</i>		0.6		0.4	nf	
Copper Sunbird	<i>Nectarinia cuprea</i>	0.9	0.1		0.5	f	
Baglafaecht Weaver	<i>Ploceus baglafaecht</i>		0.4			nf	
Slender-billed Weaver	<i>Ploceus pelzeni</i>	2.0	2.4		1.2	f	1
Spectacled Weaver	<i>P. luteolus</i>	0.3	0.3		0.5	f	
Holub's Golden Weaver	<i>P. xanthops</i>	0.1				nf	
Northern Brown-throated Weaver	<i>P. castanops</i>	0.4			0.2	f	
Yellow-backed Weaver	<i>P. melanocephalus</i>	0.4	0.4			nf	
Lesser Masked Weaver	<i>P. intermedius</i>	0.3	0.1		0.1	nf	
Speke's Weaver	<i>P. spekei</i>				0.1	nf	
Black-headed Weaver	<i>P. cucullatus</i>	0.6	0.2		0.3	nf	
Yellow-mantled Widowbird	<i>Euplectes macrourus</i>		0.1			nf	
Brown Twinspot [#]	<i>Clytopiza monteiri</i>		x			f	
Red-billed Firefinch	<i>Lagonosticta senegala</i>	0.6			0.4	nf	
Common Waxbill	<i>Estrilda astrild</i>	x			x	nf	
Bronze Mannikin	<i>Lonchura cucullata</i>	0.5				nf	
Yellow-fronted Canary	<i>Serinus canicollis</i>				0.4	nf	
Cinnamon-breasted Rock Bunting [#]	<i>Emberiza tahapisi</i>	0.4				nf	

[#]New species to the Quarter-square-degree (QSD) 60b in which the island falls (Lewis and Pomeroy 1989);
Migration status based on OSc (1996): AM = Afro-tropical migrants; PM = Palearctic migrants; MM = Malagasy migrants; where these letter are in lower case, that migrant occurs alongside resident or non-migratory individuals;
***Forest dependence categories** based on Bennun *et al.* (1996), where: Forest-dependent (FF) = 'true' forest birds, characteristic of the interior of undisturbed forest species; Forest generalists (F) = birds that may occur in undisturbed forest but are also regularly found in forest strips, edges and gaps; Forest visitors (f) = birds often recorded in forest, but are not dependent upon it; and Non-forest (nf) = birds that may not depend on the forest